

to economic science have to be studied. The scientific treatment of law has been neglected in England, and it will be our privilege to give encouragement to those who are striving to place the scientific study of law on a footing worthy of the great traditions of English jurisprudence. We shall approach the problems connected with education in a philosophical and historical spirit. Our charter imposes on us the duty of dealing with questions which embrace the whole range of the moral sciences. We have to deal with the problems of the mind. The complex agencies which constitute the motives of our actions are subjects of our investigation. The forces which influence individual energy are open to our analysis. To discover the principles which regulate the progress of human society, which eliminate the causes of friction, which facilitate the attainment of high ideals, all these inquiries come legitimately within the sphere of our operations. The unbiased attitude of the mind towards ethical and metaphysical problems is one of the conditions of our existence as a scientific body. The tendency of all scientific study is to become international and cosmopolitan. We may compare our Academy with a national clearing-house, and the International Association of Academies to an international clearing-house of ideas on these subjects.

#### NOTES.

THE names of a few men distinguished by their contributions to scientific knowledge are included in the list of birthday honours. Dr. W. D. Niven, F.R.S., has been promoted to the rank of Knight Commander of the Order of the Bath (K.C.B.). Dr. David Morris, F.R.S., and Dr. Patrick Manson, F.R.S., have been promoted to the rank of Knight Commanders of the Order of Saint Michael and Saint George (K.C.M.G.). The honour of knighthood has been conferred upon Dr. P. H. Watson. Mr. F. W. Rudler has been appointed a Companion of the Imperial Service Order.

THE Colombo correspondent of the *Times* reports that on a motion introduced in the Legislative Council on June 24, the Government of Ceylon agreed to invite the British Association to Colombo in 1907 or 1908.

DR. C. J. MARTIN, F.R.S., professor of physiology in the University of Melbourne, has been appointed director of the Jenner Institute of Preventive Medicine.

IN reply to a question asked in the House of Commons on Tuesday, it was announced that, in the first instance, the following six lightships are to be connected with shore stations by wireless telegraphy:—the East Goodwin, the South Goodwin, the Gull, the Tongue, the Sunk, and the Cross-Sand.

MANY friends of the late Sir William Roberts-Austen will be glad to know that it is proposed to erect a memorial in his honour in the Church of St. Martins, Blackheath, Womersley, where he resided for many years. The erection of the church was mainly due to his generous and devoted efforts, and he often said that the first things done to complete the building should be to line the east wall and the chancel arch with marble or alabaster. It is proposed that the memorial should include the carrying out of this work, and the erection of a memorial tablet or inscription in the church. Contributions for this purpose should be sent to Mr. H. W. Prescott, Brantynghay, Chilworth, Guildford.

M. ZYBIKOFF, a Buddhist Buriat of the Baikal region and a graduate of the University of St. Petersburg, has recently returned to Russia after a year's residence in the city of Lhasa. M. Zybikoff was able to travel in Tibet as a

Lama, and approached Central Tibet by way of the Boumza Mountain, where Przewalsky was turned back in 1879. He describes the city as one of not more than ten thousand inhabitants; the Uitchu River passes to the south, canals and dykes protecting the city itself from floods. The residence of the Dalai Lama is on Mount Buddha La, a mile from Lhasa. Near it is the ancient castle of Hodson Buddha La, a structure 1400 feet long and nine storeys high, containing the treasury, the mint, quarters for officials and monks, and a prison. The native traders are all women.

MRS. GARRETT ANDERSON, M.D., in a letter to the *Times*, directs attention to the work of the Imperial Vaccination League, which has now been in existence a year. The League, which has on several occasions been referred to in these columns, was formed to study the administration and working of the "Vaccination Act," 1898, and to promote vaccination, and especially revaccination, among the public. It is now desired to extend its sphere of work by assisting candidates at Parliamentary elections to meet the pressure brought to bear upon them by the opponents of vaccination. For this purpose Mrs. Anderson appeals for subscriptions, and desires to find 100 friends who will each contribute five guineas a year for three years. The League has done good work in the past, and it is to be hoped that this useful extension will receive support.

ATTENTION was directed in the House of Commons last week to the administration of the "Cruelty to Animals ('Vivisection') Act," 1876. The debate was more moderate in tone than some previous ones on the same subject, and had for its main object the imposition of more stringent inspection by the appointment of additional inspectors. Sir M. Foster and Dr. Hutchinson strongly deprecated the attacks on, and abuse of, the medical profession with regard to this question, and obtained a retraction from Mr. MacNeill. The Home Secretary, in his reply, defended the inspections as carried out by Dr. Thane, and pointed out that successive Home Secretaries had been among the severest critics of vivisection, and that his own control was exercised with the greatest care and full appreciation of his responsibility. It would be almost impossible to improve upon the administration of the Act, and he doubted whether the ability of the inspectors was sufficiently recognised or remunerated.

REUTER reports that a violent earthquake occurred at Erlau, Hungary, on the morning of June 26. Four shocks were felt. Several houses in the suburb of the town collapsed, and nearly all the buildings in the town were damaged.

THE arrangements for the International Fire Prevention Congress, convened by the British Fire Prevention Committee, have now been completed. The congress will be conducted in general and sectional meetings; there will be six sections, each of which will have its own honorary chairman and acting vice-president. The sections with their honorary chairmen will be as follows:—(1) Building construction and equipment, Privy Councillor J. Stubben; (2) electrical safeguards and fire alarms, Chevalier Goldoni; (3) storage of oils and spontaneous combustion, M. Louis Bonnier; (4) fire survey and fire patrols, Prince Alexander Lyoff; (5) fire losses and fire insurance, Mr. C. A. Hexamer; (6) fire tests and standardisation, M. Alcide Chaussé. All meetings, except the opening meeting, will be held at the Caxton Hall, Westminster, and the whole of the executive arrangements will be in the hands of Mr. Edwin O.

Sachs, as congress chairman, with Mr. Ellis Marsland as honorary general secretary. The general opening meeting will be at the Empress Theatre, Earl's Court, lent by the executive of the International Fire Exhibition. The subject-matter is limited strictly to fire preventive questions, and all internal fire brigade questions will be excluded, as these will be dealt with at separate meetings.

A PARIS correspondent writes:—M. Santos Dumont's experiments in aerial navigation in Paris during the past fifteen days have attracted public attention. M. Santos Dumont was seen flying over the Longchamps Hippodrome when a race was actually going on; at another time he went to his private residence in the Champs Elysées, left his balloon to the care of his assistants, who had followed his aerial track in an automobile, took his customary breakfast, and returned to the balloon shed near Puteaux Gate, in the Bois de Boulogne. On another occasion he sailed from the Puteaux Gate to Bagatelle, where he landed during a parade. But the area of his promenades is very limited, and sometimes the balloon has to be carried by hand for a part of the way; so it is not possible to say if M. Santos-Dumont has really improved his speed and stability.

The fifty-sixth annual meeting of the Palæontographical Society was held at the Geological Society's apartments, Burlington House, on June 27. The report of the council referred to the activity of the contributors to the Society's monographs, which extended over a wider field than usual. Volumes on Pleistocene Mammalia, Carboniferous and Cretaceous fishes, Carboniferous and Cretaceous Mollusca, Trilobites, Graptolites, and Devonian corals were in course of publication. The expenditure for the year exceeded the income, which was nearly 100*l.* less than that of the preceding year. The withdrawal of several small libraries was referred to, and an appeal for new personal subscribers was made. The officers were re-elected, Dr. Henry Woodward as president, Mr. Etheridge as treasurer, and Dr. Smith Woodward as secretary.

TWELVE stations took part in the international scientific balloon ascents on the morning of May 7, including Zürich, for the first time, and Bath. The records for the latter station had not been found at the time of the publication of the preliminary results. The following are the most noteworthy of the unmanned ascents:—Strassburg, 13,400 metres; at 9500 metres the temperature was  $-58^{\circ}.3$  C., above this height an inversion of temperature occurred. The reading at starting was  $10^{\circ}.5$ . At Berlin the balloon rose to 13,360 metres, temperature at 7560 metres was  $-43^{\circ}$ , at starting  $11^{\circ}.9$ . At Vienna a temperature of  $-54^{\circ}.4$  was recorded at 9020 metres, at starting  $14^{\circ}.8$ . At the first two places the ascents were made about 4h. a.m., at Vienna about 7h. a.m. Relatively high pressure prevailed over south-east Europe, and a large area of low pressure to the northward, with its centre (29.5 inches) over the North Sea.

THE Meteorological Office pilot chart for July contains, in addition to the usual information, a most useful series of twelve maps exhibiting the direction of flow of the tidal streams round the British Isles at each hour from high water at Dover. They are reduced from the more detailed large Admiralty charts in three volumes of 36 sheets. To seamen the handy form in which the streams are now shown on the pilot chart will be invaluable, as the whole circulation is seen at a glance. Early in April last it is shown, by means of a small map, that there was a remarkable displacement of the Atlantic anticyclone, which was transferred northward beyond the 50th parallel. As a result, the Transatlantic liners, to and fro on the northern

routes, experienced easterly winds right across the ocean, instead of the usual westerly and south-westerly winds. There were numerous reports of ice during May and the early part of June.

THE German Government has erected a new lighthouse on the island of Heligoland, which will supplant the old petroleum lamp that has long directed the commerce at the mouth of the Elbe. It is claimed for this light that it is one of the most powerful in operation. The distinguishing feature is the return that has been made to the old form of parabolic reflector, with a powerful illuminant in the focus, in place of the Fresnel lenses and prisms. The mirror in this case is of glass, 75cm. in diameter, and silvered at the back. An arc light with a current of 34 amperes is the illuminant. The positive pole of the carbon is so near the focus that it is estimated that the beam is not more than two degrees in diameter, and its candle-power is quoted as thirty millions. No protection against weather is provided in front of the light, and it is asserted that none is needed. Three similar mirrors and lamps are mounted in one plane round an axis, and the whole revolves four times in a minute, so that a flash is given every five seconds. A fourth mirror and lamp is provided in case of necessity, which will turn three times as rapidly, but it is not proposed to use this except in case of emergency. The duration of the flash is only one-tenth of a second. Herein the German firm of Schuckert and Co., the manufacturers, have followed the lead of the French authorities. It is, however, a question whether these brief durations have not been carried to an extreme. Undoubtedly one-tenth of a second is sufficient to make the maximum impression on the eye, when the light is brilliant. But with a hazy atmosphere, and the light much diminished, it is doubtful whether a longer duration should not be allowed. The experiment will be watched with great interest, both on account of the bold deviation from the ordinary plan which has been so long followed, and also on the ground of economy, which is claimed for the new method. It is stated that on the first night of trial the light was seen at the pier of Büsum, a distance of 64 kilometres, or 40 miles.

"THE Cure of Consumption," a popular account of the open-air treatment of pulmonary tuberculosis, and a description of "An Experiment in Nature-study," carried out among village lads, are two articles of scientific interest that appear in the current issue of the *Pall Mall Magazine*.

SEVERAL cases of fatal illness have occurred in connection with the Mond process for the extraction of nickel from its ores, which is based upon the conversion of the metal into gaseous nickel carbonyl. It is not yet known whether the nickel carbonyl is itself poisonous, or whether some other deleterious gas or substance is generated in the process, but the subject is being investigated by several experts.

THE statistics of the anti-rabic inoculations carried out at the Pasteur Institute, Paris, during 1902 have just been published. The number of persons treated was 1106, of whom three died, but one of these had not completed the treatment, leaving 1105 cases with two deaths, a mortality rate of only 0.18 per cent. This is the lowest mortality rate recorded since the commencement of the treatment in 1886.

THE new method for sewage disposal by bacterial treatment in a septic tank is not altogether free from danger. In this process the sewage is stored in closed tanks for a variable period, during which time it is acted upon and dissolved by the agency of the bacteria present. Probably

marsh gas and other gases are generated which become explosive when mixed with oxygen and fired. During the past six months three explosions of septic tanks have occurred, viz. at Exeter, Walton-on-Naze, and Sheringham; in the last named three persons were killed and several injured.

A PARLIAMENTARY paper has been issued by the Colonial Office containing official correspondence and circulars relating to the investigation of malaria and other tropical diseases, and the establishment of schools of tropical medicine. It contains a circular letter to the Governors of all colonies upon the investigation of tropical diseases and the establishment of the London School of Tropical Medicine, a summary of researches upon malaria by Drs. Stephens and Christophers, a despatch from Sir William MacGregor relating to the prevalence and prevention of malaria at Ismailia, and a despatch from Sir F. A. Swettenham upon the work done at the Institute for Medical Research, Federated Malay States. The increasing importance of the study of tropical medicine has been recognised by the Special Board of Medicine of Cambridge University, which has proposed to institute a special examination and to grant a diploma in tropical hygiene and medicine.

A PAPER read before the Royal Dublin Society by Dr. H. H. Dixon offers a reply to some criticisms passed on the cohesion theory of the ascent of sap which was proposed by the author and Dr. Joly. There seems to be a difficulty in the minds of some botanists in accepting this hypothesis if the column of water contains air-bubbles. As Dr. Dixon points out, this merely puts out of gear the particular cell in which the bubble appears. Another opinion which the author combats is that glass tubes containing plaster of Paris through which water passes may be taken as the equivalent of the water columns in trees. Experiments show that plaster continues for a long time to absorb water, and further, the amount varies with the changes of temperature.

THE appearance of a new scientific publication, *Records of the Albany Museum*, emanating from Grahamstown in South Africa is a matter for congratulation, whether it is offered to the director, Dr. Schönland, or in so far as it furnishes an indication of the sign of the times. Dr. R. Broom contributes three palæontological articles, in the first of which he describes the skull of a small lizard taken from the Triassic beds in South Africa. Dr. Schönland is responsible for the remainder of this, the first part. A critical account of a number of species of South African aloes adds considerably to the information collected by Mr. J. G. Baker in his monograph in the "Flora Capensis." In addition to the botanical papers, Dr. Schönland describes some Bushman and Hottentot pottery which is stored in the museum. A pot about 14½ inches high, consisting of a wide neck slightly ornamented by raised lines and a remarkably fine curved base, approximately oval, denotes workmanship of a higher order than that displayed by the civilised potter.

We have received the second part of the *Sitzungsberichte und Abhandlungen* of the Dresden "Isis" for 1902. The former contains an obituary notice of the late Hofrath Dr. H. Nitsche, professor of zoology at the Academy of Tharandt. Among the contents of the latter is an article, by Prof. O. Schneider, on the prevalence of melanism among the beetles of Corsica.

AN interesting case of "commensalism" is recorded by Dr. R. Horst in the May issue of the *Leyden Museum Notes* (vol. xxiii. part ii.). In Sabang Bay, Poeloe Weh, several

small fishes (*Amphiprion intermedius*) were observed to issue from the cavity of a large anemone of the genus *Discosoma*. Several previous instances of a similar association are on record, notably in Australian waters, where other species of *Amphiprion* have been observed frequenting anemones of the genus above mentioned.

OUR knowledge of the fishes of Africa is progressing by rapid strides, one of the latest contributions to the subject being a paper on a collection from Zanzibar, by Mr. H. W. Fowler, published in the *Proceedings* of the Philadelphia Academy, in the course of which two species are described as new. The same serial also contains a revision of the land and fresh-water molluscs of Western Arkansas and the adjacent States, by Mr. H. A. Pilsbry.

WE have received a copy of the address on "Modern Views on Matter: the Realisation of a Dream," delivered by Sir William Crookes before the recent Congress of Applied Chemistry at Berlin. A general account of the proceedings of the congress appeared in NATURE of June 18 (p. 156), and abstracts of some of the papers brought before the various sections are given in the present number.

THE additions to the Zoological Society's Gardens during the past week include a Patas Monkey (*Cercopithecus patas*) from West Africa, presented by Mr. H. Padgett; two Two-spotted Paradoxures (*Nandinia binotata*) from West Africa, presented by Mr. Charles R. Palmer; a Burrowing Owl (*Speotyto cunicularia*) from South America, presented by Mr. L. M. Seth-Smith; a Diademed Sand Snake (*Lytorhynchus diadema*), five Egyptian Eryx (*Eryx jaculus*) from Egypt, two Bull Frogs (*Rana cotesiana*) from North America, deposited; six American Flying Squirrels (*Sciuropterus volucella*) from North America, purchased; an Ogilby's Rat Kangaroo (*Bettongia penicillata*) born in the Gardens.

### OUR ASTRONOMICAL COLUMN.

REPORTED CHANGE ON SATURN.—The following telegram, announcing the discovery of a new phenomenon on Saturn by Prof. Barnard, has been received from the Kiel Centralstelle:—

"Conspicuous white spot, Saturn, three seconds north, transit June 23, 15h. 47.8m., Williams Bay time.—Barnard."

SEARCH EPHEMERIS FOR FAYE'S COMET.—A search ephemeris for Faye's comet, from which the following is an extract, is published in No. 3876 of the *Astronomische Nachrichten* by Prof. E. Strömberg:—

1903		<i>Ephemeris 12h. (Berlin M.T.).</i>		$\delta$		$\log r$		$\log \Delta$	
		$\alpha$	$\delta$	$\alpha$	$\delta$	$\log r$	$\log \Delta$	$\alpha$	$\delta$
		h.	m.	s.	...	...	...	...	...
July	2	...	4	59	44	...	+18	41'8	...
"	6	...	5	11	28	...	+18	42'6	...
"	10	...	5	23	6	...	+18	40'2	...
"	14	...	5	34	37	...	+18	34'7	...
"	18	...	5	46	0	...	+18	26'1	...
"	22	...	5	57	14	...	+18	14'5	...
"	26	...	6	8	19	...	+18	0'0	...
"	30	...	6	19	13	...	+17	42'8	...

This ephemeris is calculated from the elements previously published, in the *Astronomische Nachrichten*, by the same worker, and takes June 3.64 (Berlin M.T.), 1903, as the time of perihelion passage. The comet will rise about two hours before sunrise towards the middle of the month.

OBSERVATIONS OF NOVA GEMINORUM.—Prof. Barnard publishes in No. 5, vol. xvii., of the *Astrophysical Journal* the results of his observations of Nova Geminorum; most of these observations were made with the finders of the 40-inch and 12-inch refractors of the Yerkes Observatory.

During the first set of observations the Nova had a strong reddish colour, but this has since disappeared.